Filing Date: June 29, 2001

Title: MULTI-PURPOSE PLANARAZING/BACK-GRIND/PRE-UNDERFULL ARRANGEMENTS FOR BUMPED WAFERS AND DIE

Assignee: Intel Corporation

IN THE CLAIMS

Please amend the application as follows:

Claims 1-2 (Canceled)

(Currently amended) A planarizing support layer provided on a bumped surface of one 3. of a bumped-die and bumped-wafer, the support layer comprising a pre-back-grind under-fill layer both to provide substantially planar back-grind wafer support during any back-grind process, and to provide under-fill material during any mounting/under-fill process, the under-fill layer covering at least a substantial majority of bump-bodies of bumps on the bumped surface, while leaving a remainder portion of the bump-bodies exposed; and

an adhesive protection tape including a flexible conforming layer applied to the under-fill layer, the conforming layer to cover the remainder reminder portion of the bump-bodies not covered by the under-fill layer, to further improve a planarity of the support layer.

- (Previously Presented) A planarizing support layer provided on a bumped surface of one 4. of a bumped-die and bumped-wafer, the support layer comprising a pre-back-grind under-fill layer both to provide substantially planar back-grind wafer support during any back-grind process, and to provide under-fill material during any mounting/under-fill process, the under-fill layer covering an entirety of bump-bodies of bumps on the bumped surface.
- (Original) A support layer as claimed in claim 4, the support layer further comprising an 5. adhesive protection tape applied to the under-fill layer.
- (Currently amended) A support layer as claimed in claim 4, the under-fill layer being of a 6. predetermined thickness beyond a height thickness of the bump-bodies, to provide additional under-fill material to under-fill structures other than the bumps during any mounting/under-fill process.

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(Previously Presented) A support layer as claimed in claim 4, the under-fill layer 7. comprising a polymer material.

- (Previously Presented) A support layer as claimed in claim 4, the under-fill layer 8. comprising one of a thermoplastic and thermoset polymer material.
- (Previously Presented) A support layer as claimed in claim 4, the under-fill layer 9. comprising one of a thermoplastic material, thermoset material, light-curable material and a chemical-curable material.
- (Previously Presented) A support layer as claimed in claim 4, the under-fill layer 10. comprising an opaque material to provide at least one of light, ultra-violet (UV) light, and radiation protection to a surface of the bumped-die or bumped-wafer.

Claims 11-12 (Canceled)

(Currently amended) A back-grind/mounting arrangement comprising one of a bumped-13. die and bumped wafer comprising: a planarizing support layer provided on a bumped surface of the bumped-die or bumped-wafer, the support layer comprising a pre-back-grind under-fill layer both to provide substantially planar back-grind wafer support during any back-grind process, and to provide under-fill material during any mounting/under-fill process, the under-fill layer covering at least a substantial majority of bump-bodies of bumps on the bumped surface, while leaving a remainder portion of the bump-bodies exposed; and

an adhesive protection tape including a flexible conforming layer applied to the under-fill layer, the conforming layer to cover the remainder reminder portion of the bump-bodies not covered by the under-fill layer, to further improve a planarity of the support layer.

(Currently amended) An arrangement as claimed in claim 13, the arrangement further 14. comprising a secondary under-fill layer to under-fill at least one of: the remainder reminder

portion of the bump-bodies not covered by the under-fill layer, and structures other than the bumps as encountered during any mounting process.

- (Previously Presented) A back-grind/mounting arrangement comprising one of a 15. bumped-die and bumped wafer comprising: a planarizing support layer provided on a bumped surface of the bumped-die or bumped-wafer, the support layer comprising a pre-back-grind under-fill layer both to provide substantially planar back-grind wafer support during any backgrind process, and to provide under-fill material during any mounting/under-fill process, the under-fill layer covering an entirety of bump-bodies bumps on the bumped surface.
- (Original) An arrangement as claimed in claim 15, the support layer further comprising 16. an adhesive protection tape applied to the under-fill layer.
- (Currently amended) An arrangement as claimed in claim 15, the under-fill layer being 17. of a predetermined thickness beyond a height thickness of the bump-bodies, to provide additional under-fill material to under-fill structures other than the bumps as encountered during any mounting process.
- (Previously Presented) An arrangement as claimed in claim 15, the under-fill layer 18. comprising a polymer material.
- (Previously Presented) An arrangement as claimed in claim 15, the under-fill layer 19. comprising one of a thermoplastic and thermoset polymer material.
- (Previously Presented) An arrangement as claimed in claim 15, the under-fill layer 20. comprising one of a thermoplastic material, thermoset material, light-curable material and a chemical-curable material.

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(Previously Presented) An arrangement as claimed in claim 15, the under-fill layer 21. comprising an opaque material to provide at least one of light, ultra-violet (UV) light, and radiation protection to a surface of the bumped-die or bumped-wafer.

(Previously Presented) An arrangement as claimed in claim 15, wherein the arrangement 22. is a flip-chip back-grind/mounting arrangement.

Claims 23-24 (Canceled)

(Currently amended) A back-grind/mounting method useable with either one of a 25. bumped-die and bumped wafer, the method comprising: providing a planarizing support layer on a bumped surface of the bumped-die or bumped-wafer, the support layer comprising a pre-backgrind under-fill layer both to provide substantially planar back-grind wafer support during any back-grind process, and to provide under-fill material during any mounting/under-fill process, the under-fill layer covering at least a substantial majority of bump-bodies of bumps on the bumped surface, while leaving a remainder portion of the bump-bodies exposed; and

an adhesive protection tape including a flexible conforming layer applied to the under-fill layer, the conforming layer to cover the remainder reminder portion of the bump-bodies not covered by the under-fill layer, to further improve a planarity of the support layer.

- (Currently amended) A method as claimed in claim 25, the method further comprising: 26. providing a secondary under-fill layer to under-fill at least one of: the remainder reminder portion of the bump-bodies not covered by the under-fill layer, and structures other than the bumps as encountered during any mounting process.
- (Original) A back-grind/mounting method useable with either one of a bumped-die and 27. bumped wafer, the method comprising: providing a planarizing layer comprising a pre-backgrind under-fill layer both to provide substantially planar back-grind wafer support during any back-grind process, and to provide under-fill support layer on a bumped surface of the bumped-

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die or bumped-wafer, the support material during any mounting/under-fill process, the under-fill layer covering an entirety of bump-bodies of bumps on the bumped surface.

- (Original) A method as claimed in claim 27, the support layer further comprising an 28. adhesive protection tape applied to the under-fill layer.
- (Currently amended) A method as claimed in claim 27, the under-fill layer being of a 29. predetermined thickness beyond a height thickness of the bump-bodies, to provide additional under-fill material to under-fill structures other than the bumps as encountered during any mounting process.
- (Previously Presented) A method as claimed in claim 27, the under-fill layer comprising 30. a polymer material.
- (Previously Presented) A method as claimed in claim 27, the under-fill layer comprising 31. one of a thermoplastic and thermoset polymer material.
- (Previously Presented) A method as claimed in claim 27, the under-fill layer comprising 32. one of a thermoplastic material, thermoset material, light-curable material and a chemicalcurable material.
- (Previously Presented) A method as claimed in claim 27, the under-fill layer comprising 33. an opaque material to provide at least one of light, ultra-violet (UV) light, and radiation protection to a surface of the bumped-die or bumped-wafer.
- (Previously Presented) A method as claimed in claim 27, wherein the method is a flip-34. chip back-grind/mounting method.